



NHA

Symposium

2007



COL 'BOONE'
JAMISON Deputy
Commander



***“Change is the mother of all
risk”***





Naval Safety Center

**provides safety assistance
and advice to the CNO,
CMC, and the Deputy
Assistant SECNAV for Safety
in order to enhance the
warfighting capability of the
Navy and Marine Corps,
preserve resources and
improve combat readiness**

SECRETARY OF DEFENSE CHALLENGE

**There is no
excuse for
losing
lives... I
want to see
the results
of your
actions**



THE SECRETARY OF DEFENSE
1000 DEFENSE PENTAGON
WASHINGTON, DC 20301-1000

JUN 22 2006

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
COMMANDERS OF THE COMBATANT COMMANDS
SERVICE CHIEFS

SUBJECT: Reducing Preventable Accidents

I have set some very specific mishap reduction goals for the Department to achieve. My congratulations to those who are progressing toward their respective goals, but others are not. We must rededicate ourselves to those goals – and achieve them.

Too often we excuse mishaps by citing the difficult circumstances in which we operate. We have trained our men and women to operate safely in very trying conditions. There is no excuse for losing lives given proper planning, attention to detail, and the active involvement of the chain of command.

Accountability is essential to effective leadership. I expect all the Department's leaders, from the Commander to the first line supervisors, to be accountable for mishaps under their watch. We simply will not accept status quo.

If we need to change our training, improve our material acquisition, or alter our business practices to save the precious lives of our men and women, we will do it. We will fund as a first priority those technologies and devices that will save lives and equipment. We will retrofit existing systems, and consider these devices as a "must fund" priority for all new systems. We can no longer consider safety as "nice-to-have."

I want to hear what you are doing to improve your safety performance and I want to see the results of your actions.



Memorandum from Secretary of Defense, 22
June 2006

NHA Symposium.



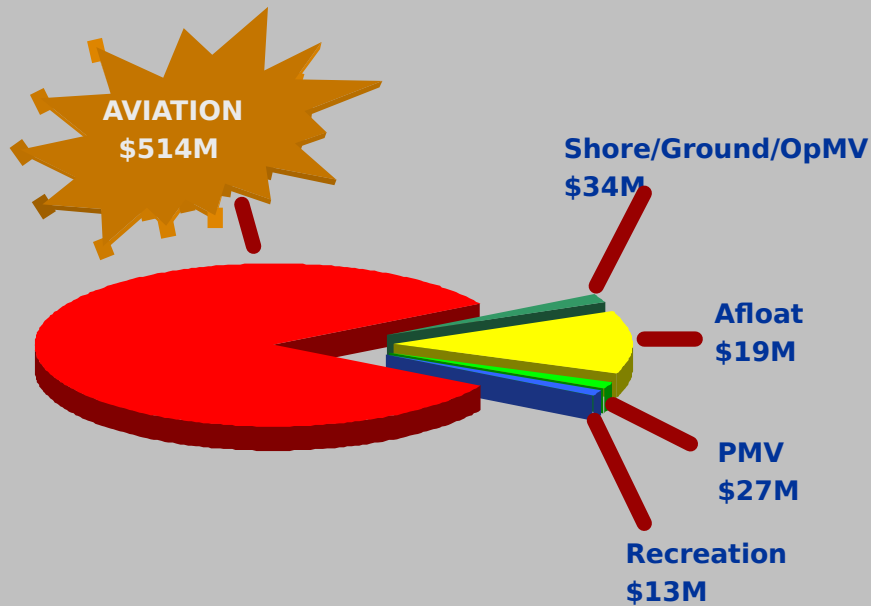
Bad Day



FY06 Total Cost and Deaths

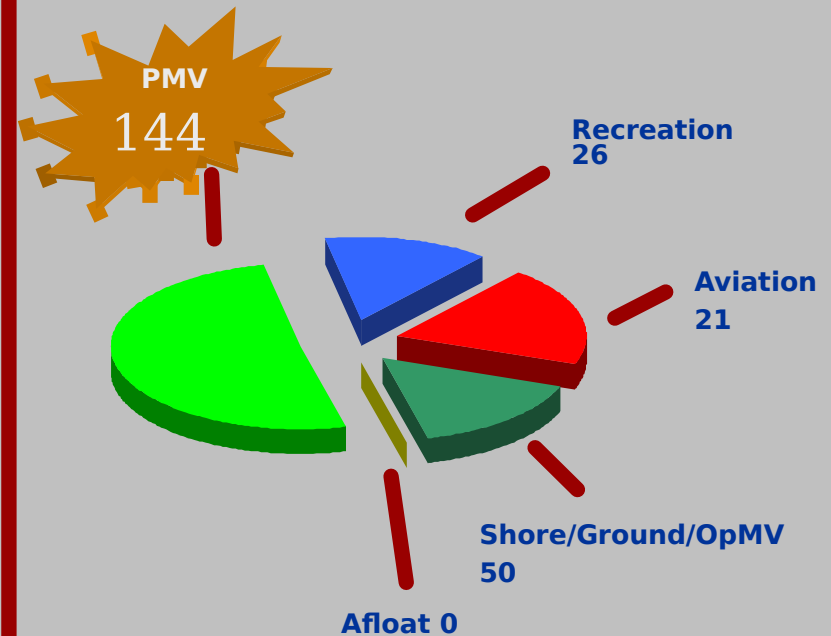
Navy and Marine

Cost



Total Cost: \$606M

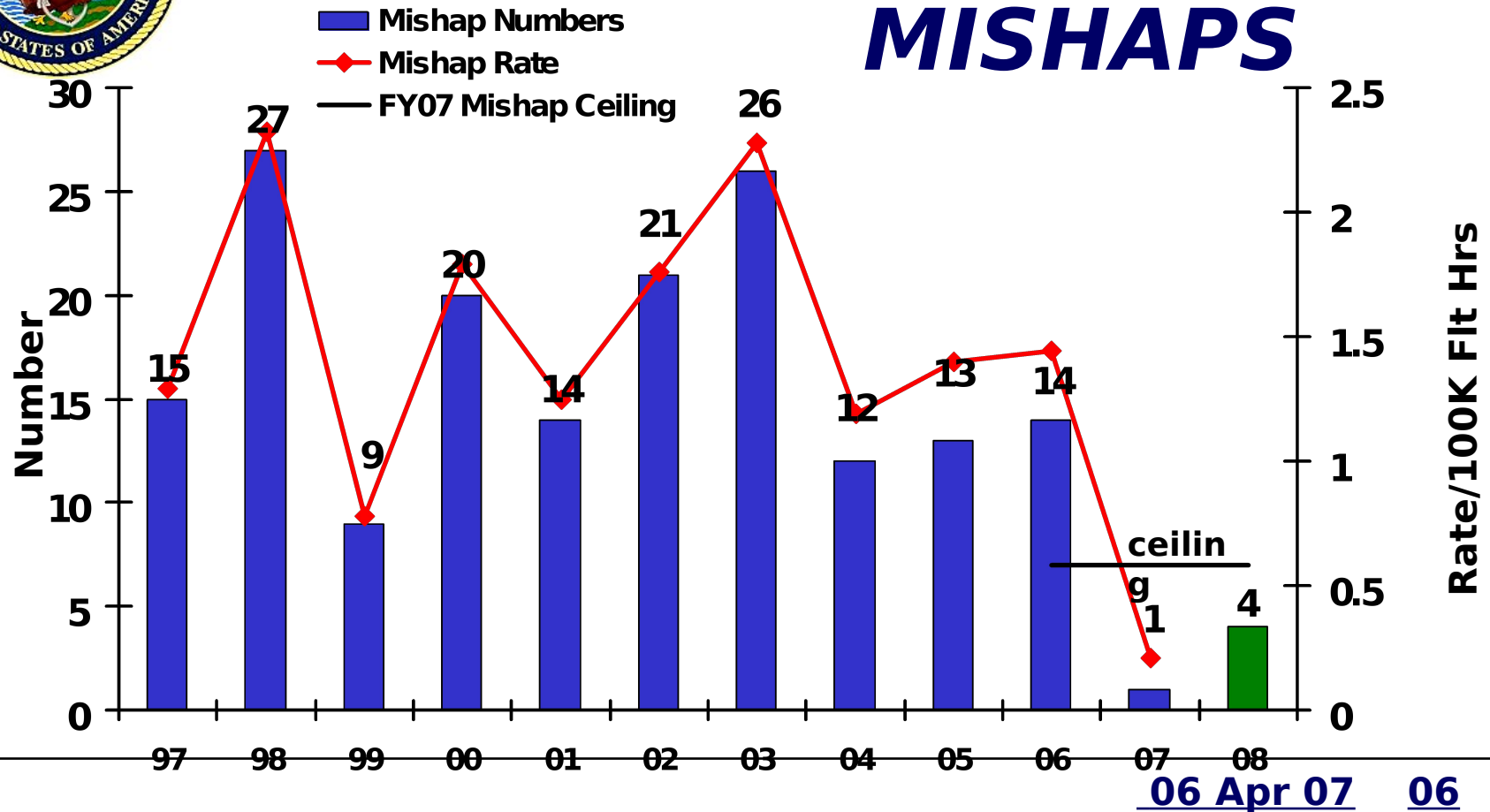
Fatalities



Total Fatalities: 241



CLASS A FLIGHT MISHAPS



Apr 06

CLASS A FM/FM RATE FY COMPARISON: 1/ 0.21

9 / 1.80

FY06 MISHAPS/MISHAP RATE: 14 / 1.44

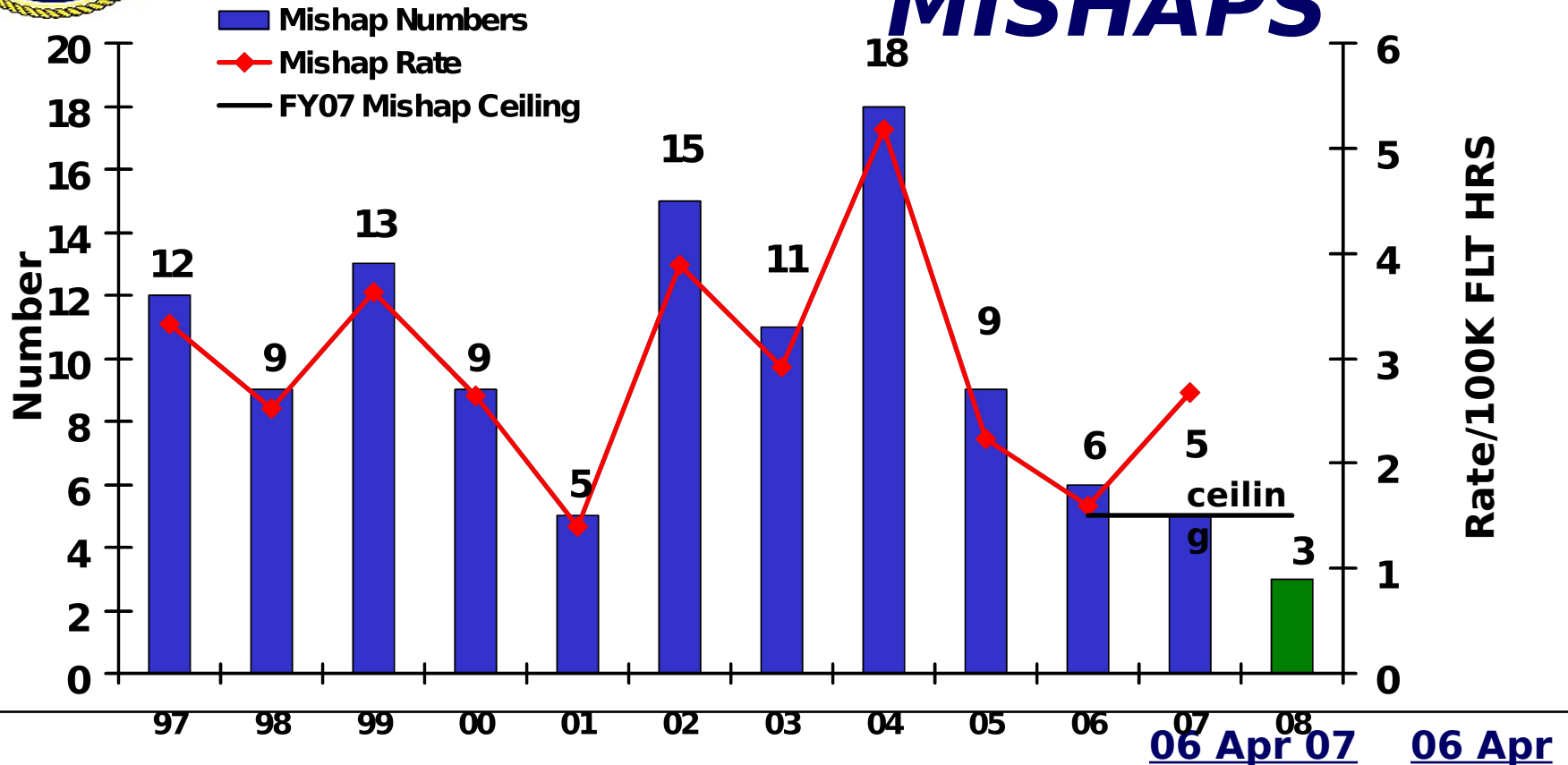
10-YEAR AVERAGE (FY97-06) MISHAPS/MISHAP RATE: 17.1 / 1.56

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CLASS A FLIGHT MISHAPS



06

2.07

CLASS A FM/FM RATE FY COMPARISON: 5 / 2.67 4/

FY06 MISHAPS/MISHAP RATE: 6 / 1.59

10-YEAR AVERAGE (FY97-06) MISHAPS/MISHAP RATE: 10.7 / 2.92

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Narratives

red indicates OIF fatality

- **USN AVIATION CLASS A MISHAPS**

26 Jan 07 (CNAP/HSC-23) MH-60S entered water during plane guard operation. 4 fatalities.

- **USMC AVIATION CLASS A MISHAPS**

21 Mar 07 (VMFA-323) F/A-18C crashed into water. Pilot ejected safely

08 Mar 07 (HMM-264) UH-1N experienced hard landing. 6 crew injuries. Aircraft destroyed.

11 Dec 06 (HMH-465) CH-53E rolled on its side during landing. 1 USMC fatality.

03 Dec 06 (HMM-165) CH-46E landed in water. Passengers exited into water prior to aircraft water taxi to land. Two Marine fatalities, 1 Air Force fatality and 1 Army fatality.

30 Nov 06 (VMFAT-101/MARFORPAC) F/A-18C impacted ground after reporting hydraulics problems. Pilot ejected with minor injuries.

Causal Factors in Navy Helicopter Mishaps

Involved Factor	# Mishaps	Rate	Percent
Aircrew Factor	31	1.37	78%
Material Malfunction	13	0.58	33%
Maintenance Personnel	11	0.49	28%
Supervisory Personnel	29	1.28	73%
Facilities Personnel	2	0.09	5%
Human Error	36	1.59	90%
Under Investigation	1	0.04	3%
Undetermined	1	0.04	3%
All Helo Mishaps (FY97-FY06)	40	1.77	100%

A mishap can have more than one Causal Factor.
Human Error includes Aircrew, Maintenance Errors,
& Supervisory Factors (which can be counted more
than once in a mishap)

Causal Factors in USMC Helicopter Mishaps

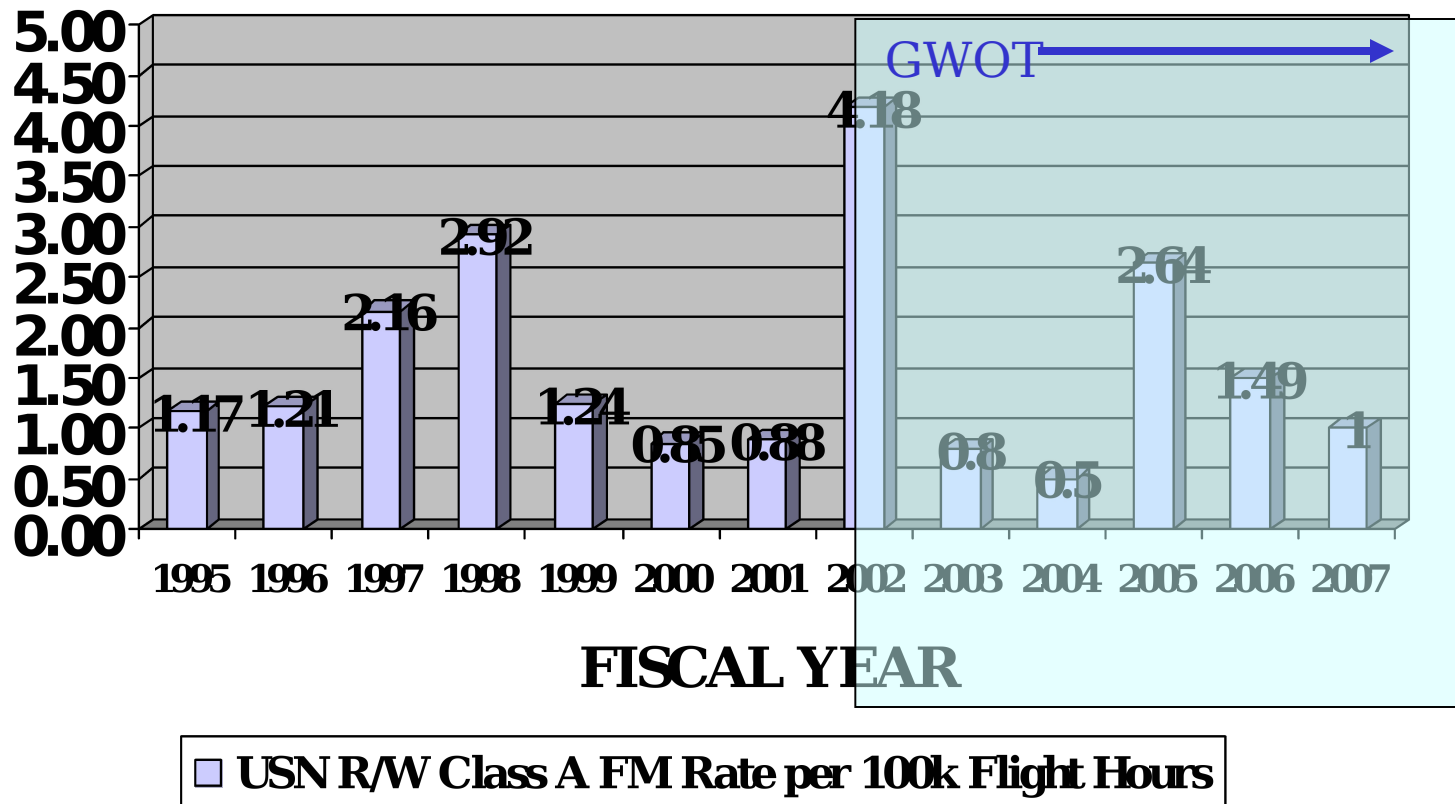
Marine Helicopter Class A Flight Mishaps (Rate per 100k Hrs)

Involved Factor	# Mishaps	Rate	Percent
Aircrew Factor	29	1.69	83%
Material Malfunction	9	0.53	26%
Maintenance Personnel	3	0.18	9%
Supervisory Personnel	24	1.40	69%
Facilities Personnel	6	0.35	17%
Human Error	34	1.98	97%
Under Investigation	0	0.00	0%
Undetermined	0	0.00	0%
All Helo Mishaps (FY97-FY06)	35	2.17	100%

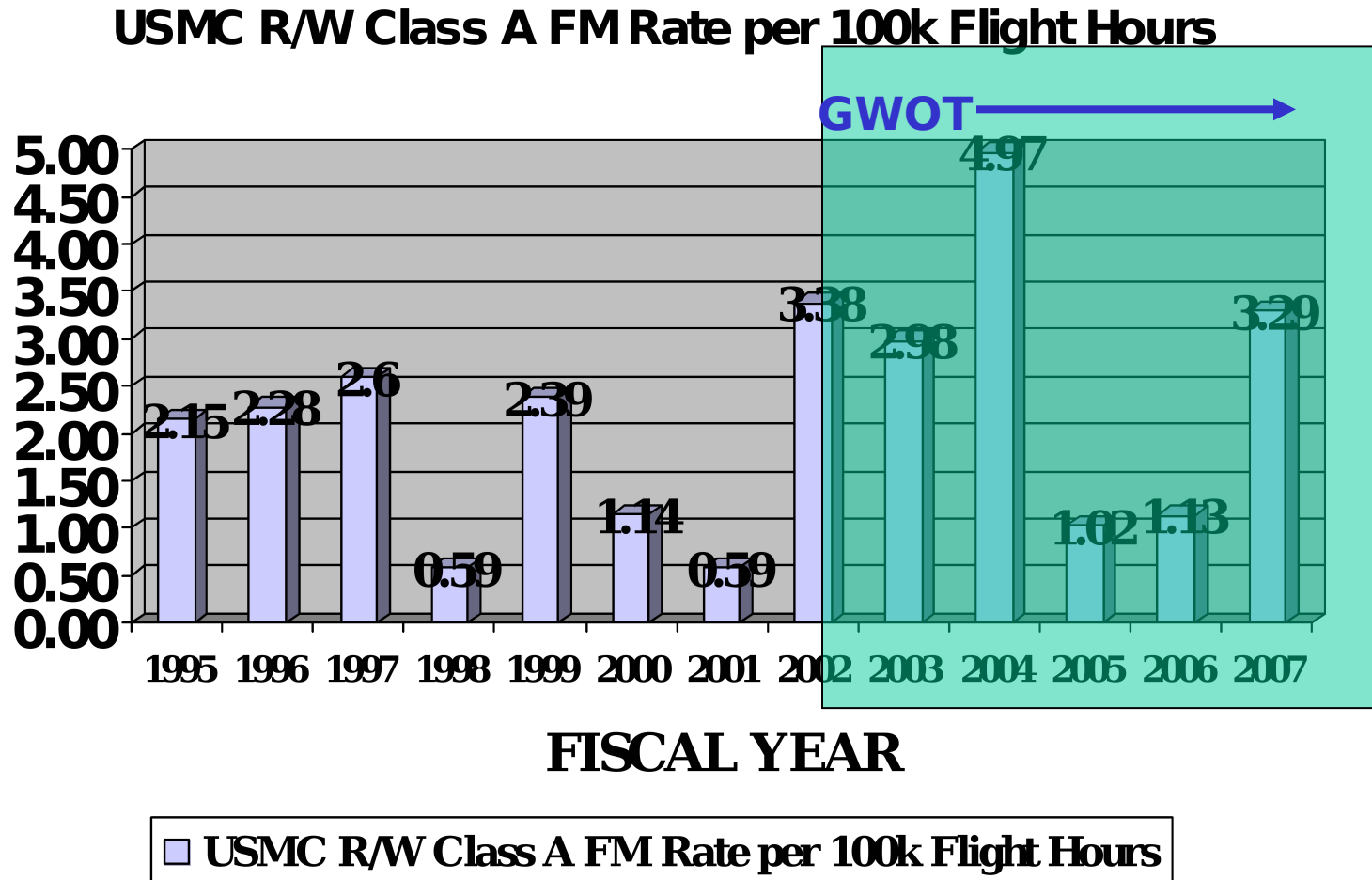
A mishap can have more than one Causal Factor. Human Error includes Aircrew, Maintenance Errors, & Supervisory Factors (which can be counted more than once in a mishap)

USN Rotary Wing Mishap Trend

USN R/W Class A FM Rate per 100k Flight Hours



USMC Rotary Wing Mishap Trend



Aviation Trends and Takeaways

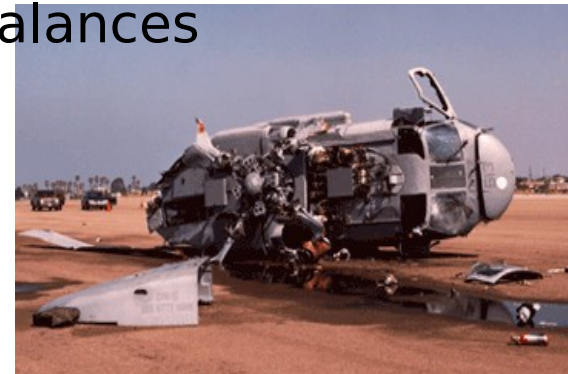
TRENDS

Mishap Investigations

- Human error (aircrew):
Leading causal factors
 - Skill-based errors
 - Decision errorsLeading preconditions for errors
 - CRM failures
 - Adverse mental states
- Inexperience
- Training issues

TAKEAWAYS

- State-of-art simulators and data centric systems
- Training
- Proficiency
- Institutionalize ORM & CRM
- Enforce standards
- Increase checks and balances



Four Naval Helicopter Trends

Drowning in the Desert

NATOPS Discipline

Brown Out



Death and Injury at High Speeds

High speed...
For a Tortoise



CO's, XO's, MO's, Div O's, Maint. Supervisors –
Present?

What could be simpler than an aircraft move?

Of all the high risk things we do, this is one is
too easy

The Human Chock



- 1993

STBD WING WALKER RUN OVER BY MAIN MOUNT DURING ACFT TOW ASHORE.

FATAL INJURY

CAUSE FACTORS: (1) SUPERVISORY

(A) SQDN CO INADEQUATE ENFORCEMENT OFPROCEDURES

(B) SQDN MO IMPROPERLY MANAGED

- 1995

ORDNANCEMAN SUFFERED CRUSHED FOOT FROM TAXIING ACFT, RESULTING IN

PERMANENT DISABILITY

CAUSE FACTORS: (1) SUPERVISORY:

(A) WING COMMANDER FAILED TO ENSURECOMPLIANCE

(B) CO: FAILED TO ENFORCEDIRECTIVES

- 2000

TOW DRIVER RECEIVED FATAL INJURY WHEN TOW TRACTOR HIT PARKED AIRCRAFT.

CAUSE FACTORS: (1) SUPERVISORY - SQDN CO -FAILED TO PROVIDE ADEQUATE SUPERVISION



The Human Chock



- **2003**

DURING ACFT TOWING, PERSON **FATALLY CRUSHED BETWEEN STORE & DOLLY**

CAUSE FACTORS: (1) SUPERVISORY

DIVISION OFFICER: FAILED TO PROVIDE ADEQUATE TRAINING AND SUPERVISION

- **2004**

**SQN ACFT UNDER TOW DIRECTION OF YELLOW SHIRT RAN OVR SHIP'S BLUE SHIRT
PERMANENT **DISABILITY****

CAUSE FACTORS: 1) SUPERVISORY

(A) AIRCRAFT DIRECTOR ALLOWED AIRCRAFT MOVE WITH AN UNQUALIFIED PLANE HANDLER

(A) FLIGHT DECK OFFICER - FAILED TO ENSURE PROCEDURES - FAILED TO ADEQUATELY
SUPERVISE

- **2005**

**WING WALKER'S LEG RUN OVER BY ACFT DURING ACFT MOVE - PERMANENT
DISABILITY**

CAUSE FACTORS: (1) SUPERVISORY

(A) WING CO: FAILED TO PROVIDE ADEQUATE GUIDANCE TO CONDUCT AIRCRAFT MOVE
BRIEFS

(B) SQDN MISHAP SAFETY OBSERVER: FAILURE TO COMPLY WITH SOP

- **2006**

ACFT RAN OVER AIRMAN'S RIGHT LEG DURING TAXI ON FLIGHT DECK - **PERMANENT **DISABILITY****



Today... Same Song - Different Verse

- **20 MAR 2007**

MAINTENANCE PERSONNEL INJURED DURING TOWING EVOLUTION.

WHILE TOWING AIRCRAFT TO WASH RACK AIRMAN PERSONNEL WAS CAUGHT AND DRUG UNDER RIGHT WHEEL AND SUFFERED SKIN AND MUSCLE DAMAGE.

- **25 MAR 2007**

WING WALKER INJURED WHILE PLANE WAS BEING TOWED.

Both Recent Mishaps under Investigation –
Causal?
Trending in the Wrong Direction

Blue Threat Analysis

- Lack of supervision – guidance – enforcement
- Perceived “Low Risk” evolution
- Are we learning from our costly mistakes?
- Time Critical ORM applied?

Why are none of these Marine

Mishaps?

NHA Symposium.



Drowning in the Desert

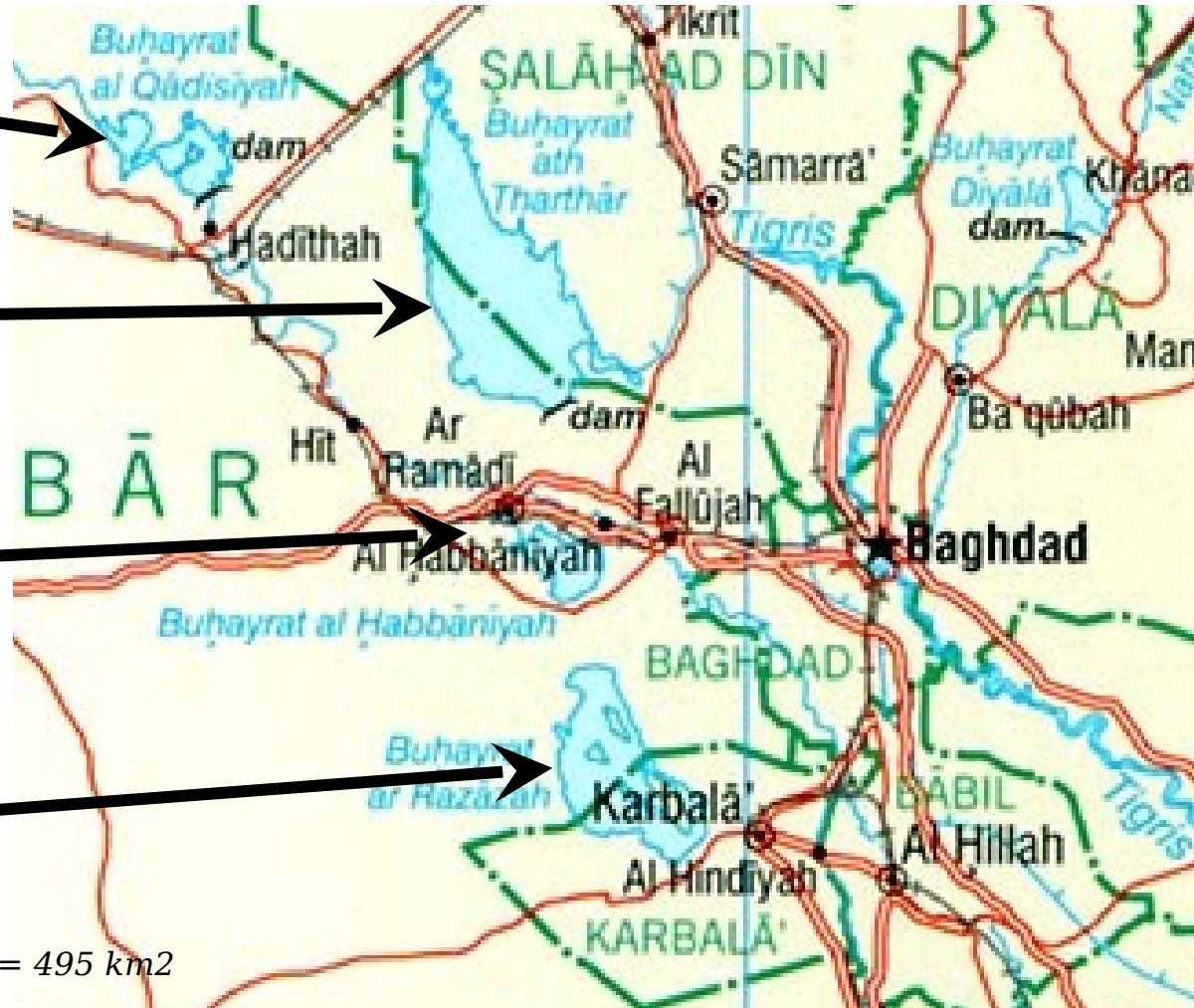


The Big Four

Qadisiyah (Haditha)

500km²

Approach/departure
s conducted over
the water from dam



Tharthar

2119 km²

(Half the size of
the great salt
lake)

Habbaniyah

250 km²

Located 2000m
west of Al
Taqaddum

Razazah

1,000 km²

Note:****Lake Tahoe = 495 km²

Floatation devices lessons learned...



HMM-364



(19 May 2003)
Wire-strike

- Captain, USMC
- 1stLt, USMC
- Staff sergeant,
USMC
- LCPL, USMC

***Aeromedical Analysis finds all four
aboard drowned.

HMLA-169



(Lake Habbaniyah)
-Marine CPL
Cause of death was drowning. Found outside the cockpit with body armor and flight vest removed. No HABD or floatation devices were worn/installed.

HMM-165



(Haditha Dam)

-ALL PAX WERE
EQUIPPED WITH
ARMOR, HELMET, AND
A WEAPON, BUT NO
FLOTATION DEVICES.



-ALL RAFTS HAD BEEN
REMOVED ONCE THE
MS HAD DEPARTED
USS BXR.

HMM-165 (3 Dec 06)

MAJ : O4 : USMC

CAPT : O3 : USAF

CPL : E4 : USMC

SPC : US Army

OPNAV 3710.7T

- **“INFLATABLE LIFE PRESERVERS SHALL BE READILY AVAILABLE WHEN OPERATING FROM AERODROMES IN THE VICINITY OF COASTAL WATERS OR WHEN OPERATING FROM INLAND AERODROMES WHERE TAKEOFF, ROUTE OF FLIGHT, OR APPROACH PATH IS OVER WATER.” OPNAV 3710.7T FURTHER STATES “HELICOPTER EMERGENCY EGRESS DEVICE SHALL BE WORN BY ALL HELICOPTER AIRCREW DURING OVERWATER FLIGHT.”**

VS

- *“ESTABLISHED PRACTICES AND NORMAL LAND BASED AIRCRAFT CONFIGURATION FOR DESERT OPERATIONS (AS PRESCRIBED BY NAVAIR 13-1-6.7-4) THE MS, UPON ARRIVAL IN THEATER, REMOVED ALL RAFTS AND OTHER FLOATATION DEVICES FROM THEIR AIRCRAFT.”*



NATOPS

‘Written in Blood’



NATOPS Violations Trending Up



- **Since October 2003 there have been 31 Navy and Marine Corps Class A helicopter mishaps...**
- **Of the MIRs closed out, 29% include at least one NATOPS violation causal factor**
- **NATOPS !**

NATOPS failure results



- **1996: PAC intentionally violated NATOPS bank angle and pitch limits at low altitude, resulting in a water CFIT with multiple fatalities.**
- **1998: A crew knowingly planned a flight into icing conditions in violation of 3710 and model NATOPS, resulting in a CFIT with multiple fatalities.**

NATOPS failure results



- **2002: PAC responded incorrectly to engine failure in hover. Hard landing resulted in class A aircraft damage.**
- **2003: PAC disregard of NATOPS night approach procedures resulted a CFIT and lost aircraft.**

NATOPS failure results



- **2003: A helo crew with an in flight fire failed to land immediately per NATOPS. The aircraft crashed, resulting in a Class A mishap with four fatalities.**
- **2004: The PNAC in a helo with tail rotor failure failed to secure the PCLs per NATOPS, causing additional damage in a class A mishap.**

NATOPS failure results



- **2005: A HAC misdiagnosed left rotation in a stuck pedal situation as a loss of tail rotor thrust and applied the wrong EP. This error was cited as causal to a Class A mishap.**
- **2005: A formation flight violated NATOPS by knowingly continuing VMC in IMC conditions, resulting in a CFIT mishap with multiple fatalities.**

NATOPS failure results



- **2006: A pilot had recently completed an excellent NATOPS check but did not know a NATOPS EP, did not break out the PCL, and did not know the caution associated with the EP. These failures were cited as causal in a Class A helicopter mishap.**
- **2006: FCF conducted over water without flotation. Aircraft impacted the water and one crewmember drowned.**

NATOPS Integrity



- **How many NATOPS Instructors and ANIs are here today?**
- **How many times has someone failed one of your NATOPS checks?**
- **How many times have you assigned a grade of conditionally qualified?**
- **How often does your squadron hold NATOPS training?**
- **How often does your NATOPS training include graded tests on Critical Memory Item EPs?**
- **Do you post the scores?**



NATOPS Integrity



- **When was the last update to your closed/open book NATOPS test?**
- **Do your closed book tests require pilots to list Warnings or Cautions associated with a given EP?**
- **How often do your pilots fly an EP sim or flight?**
- **How often do you train to non-CMI EPs?**
- **Do you require your pilots to break out the checklist for non-CMI EPs?**
- **Do you conduct training on 3710 NATOPS?**

Things To Consider

- Is giving your buddies easy NATOPS checks really doing them a favor?
- Do you have the integrity to hurt someone's pride rather than chance them hurting themselves or someone else?
- Has anyone ever thanked you for holding them to a high standard?
- Are you doing everything possible to ensure your NATOPS program isn't part of the Blue Threat?



- LOOKING out the cockpit of a 46 after a desert landing

- Dash-1 is out there

In the Dust



What is Brownout

- Helicopter landings in the desert environment that stir up dust clouds

THREAT

- Brownout causes danger from unseen aircraft maneuvering nearby, uneven terrain, poles, wires, other obstacles, the ground, etc.

Class A FM Brownouts 01-07

- What follows is a quick look at 3 of the 5 USN/USMC Class A Flight Mishaps that occurred since the start of OEF:
 - H60
 - CH53E
 - UH1N

H-60 Desert Landing



- Crew properly briefed flight, expected enemy threat along route of flight and in vicinity of LZ
- Crew briefed a steep approach due to wires/obstacles near LZ
- Winds were briefed at 15/G25 out of the south
- Enroute flight encountered low visibility
- LZ surrounded on all 4 sides, one side had 30 foot poles with wires

H-60 Desert Landing con't



- **NVD Mission in a classified compound**
- **LZ changed from pre-briefed location**
- **Confined area landing with vehicles in LZ with lit non-NVD compatible lighting**
- **Found LZ on second pass**
- **LZ lit by IR strobe, aircraft FLIR also used**
- **Crosswind landing**
- **Dust cloud formed with aircraft on final**

H-60 Desert Landing con't



- **Aircraft entered dust cloud at 35 feet**
- **PAC lost all outside visual reference due to cloud and Non-NVD lights**
- **MCC still saw ground, only straight down**
- **Wave-off attempted but aircraft continued to drift left impacted ground, rolled, and hit a parked aircraft**
- **Aircraft destroyed**
- **Crew received only minor injuries**

H60 Brown Out Blue Threat Analysis

- LZ change
- LZ lighting conditions
- No ground control of assets in LZ
- No communication with LZ control
- Poor crew resource management during approach/brown out conditions
- Poor evaluation of the LZ and prevailing wind conditions based on power available
- Inadequate desert landing, brown out, wave off training

CH-53E Desert Landing



- Crew properly briefed
- MHAC briefed waveoff procedures
- Mission was training for troop on/off load at nearby airfield
- Day time VFR
- Pickup LZ changed
- MA is dash-2 in flight of 2
- CP executed flawless no hover landing
- On/Off load training for pax at airfield became monotonous

H-53E Desert Landing con



- Pax not strapped in on departure for drop
- No communication from cockpit to confirm passenger strapped in
- Dash-1 executes uneventful landing
- Dash-2, MA, PAC loses sight of lead and ground at 15 feet and calls it
- MHAC fails to take controls
- MA drifts left, impacts ground and rolls
- Pax are thrown about and out of the cabin
- 1 fatality

Blue Threat Analysis

- **Complacency set in during on/off drills**
- **Mishap crew did not ensure pax were strapped into troop seats**
 - **Squadron released hazrep post mishap on combat loaded pax inability fit/strap into crash attenuating seats in cabin**
- **Desert landing policy in effect mandating wave off requirements**
- **Failure of Aircrew Coordination**
 - **Crew did not call for or execute wave off as required when visual reference with ground lost**
 - **MHAC failed to call brown out or take controls after MCP called brown out**
- **Crew not allowed to conduct desert landing training once in theater (desert landing skills**
- **Post-mishap: desert landing training mandated by Wing**



UH1N Desert Take Off Brown Out

- Mishap occurred at the end of long crew day
- MA was dash-2 of section
- NVD T/O from FARP in LLL conditions with no visible horizon
- Actual winds were almost 180 degrees out from reported winds
- No windsock on airfield
- Lead conducted ITO to a downwind
- MA allowed 30 second separation on take off



UH1N Desert Take Off Brown Out

- **MA attempted to conduct a no hover T/O followed normal transition with a 10-15 knot tailwind**
- **MA entered dust cloud immediately on T/O**
- **Pilots became disoriented by dust cloud, poor instrument scan, and lack of aircrew coordination**
- **Aircraft drifted left and impacted ground, skidded and rolled upside down**
- **3 fatalities**



Blue Threat Analysis

- Failed to execute ITO which requires altitude over airspeed
- Executed normal T/O in brown out conditions
- Failed to train to NATOPS ITO procedures
- Failure of aircrew coordination
- PIC failed to back up PAC
- Aircrew became task saturated while switching between instrument scan and visual scan

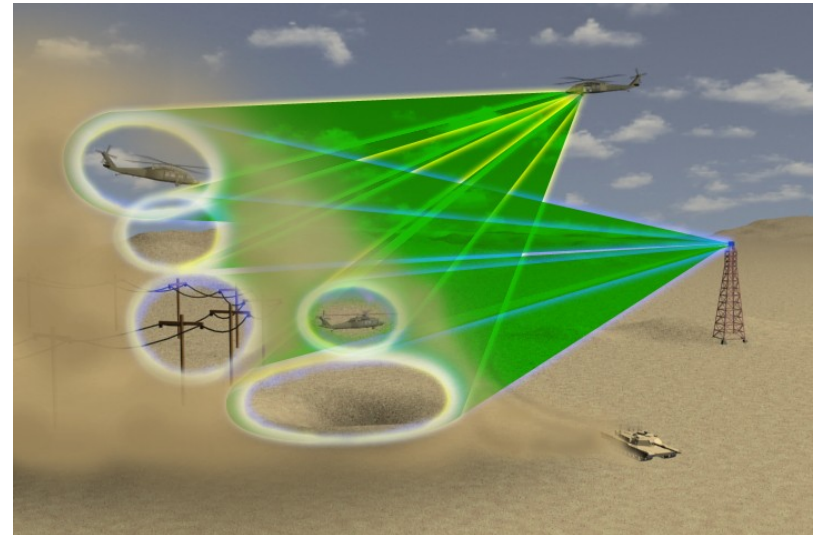


Common Themes

- All 3 incidents occurred ISO of OIF/OEF
- Poor Aircrew Coordination
- Failure to execute proper ITO
- Failure to execute timely wave off
- Poor instrument scan
- Failure to back up PAC
- Inadequate desert landing training
- No cockpit instrumentation to allow landing in a brown out environment

A Way Ahead

- Marine Corps, Army, and Air Force are looking into current technological solutions
- Plan is to provide onboard equipment that will:
 - “See” through the obscuration
 - Provide cockpit instrumentation to allow landing from a hover or with slow forward airspeed
- Sikorsky awarded contract for “Dust Off” Program to begin developing above technology





***Time
Critical
ORM
is a...***

Tactic

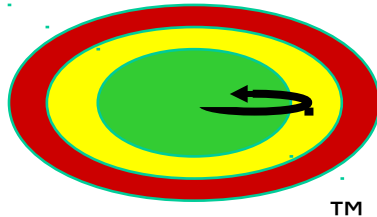
Blue Threat - Action/Inaction by whom is causing losses
Blue Threat - Losses far exceed **Red Threat** losses

Time Critical Risk Management Elements

Process and Mnemonic

- A** - Assess (your situation, your potential for error)
- B** - Balance Resources (to prevent and trap errors)
- C** - Communicate (risks and intentions)
- D** - Do & Debrief (take action and monitor for change)

Risk Assessment



- **Green:** Errors may occur, but they will be caught
- **Yellow:** Errors may occur, but they may not be caught and may become cumulative
- **Red:** Errors will occur that are not caught

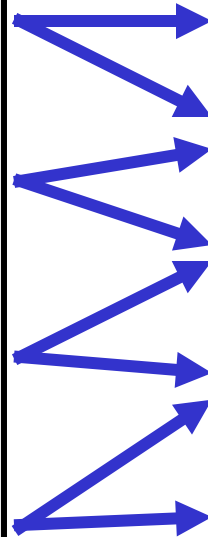
Crew Coordination Skills

- **Situational Awareness**
 - I know my environment
 - I can see changes
- **Mission Analysis**
 - I can assess the changes
 - I can see how they affect my job/mission
- **Adaptability/Flexibility**
 - The plan is flexible and we can adapt to changes
- **Decision Making**
 - We have enough information, time and a good plan of action, or we need help
- **Assertiveness**
 - I have confidence in myself, my team, and my leadership to bring new threats to their attention
- **Communication**
 - I need to let my teammates or others involved know what I know
- **Leadership**

Time Critical and Deliberate

Time Critical Process and Mnemonic

- A** - Assess (your situation, your potential for error)
- B** - Balance Resources (to prevent and trap errors)
- C** - Communicate (risks and intentions)
- D** - Do and Debrief (take action and monitor for change)



5-Step Deliberate Process

- 1. Identify Hazards**
- 2. Assess Hazards**
- 3. Make Risk Decisions**
- 4. Implement Controls**
- 5. Supervise (watch for changes)**

Not a member of NHA...



Overcoming the Blue Threat

- Detection of the problem
- Effective communication
- Selection of a course of action
- Effective NATOPS EP guidance
- Training set pre-conditions for success
- Decisive action
- Water survival training overcame egress difficulties
- Crew coordination success
- Best case outcome

Aviation Best Practices

- Risk Assessment of Blue vs Red Threat
- Best Practices collection available at <http://www.safetycenter.navy.mil/bestpractices/default.htm>
- Human Factors Council (HFC) process that includes maintenance personnel – VAW-126
- Complacency Avoidance Plan – attacks the OIF Blue Threat – HMLA-369
- Desert Landing Policy and Mitigation Strategy – MAG16
- Drive Safe Indoctrination Presentation – HSC-2
- Safety Billet Continuity – people in billets for 1 year minimum and good turnover binders (see website for VFA-14 binder example)
- Post Flight incident report form in Maintenance Control or with SDO – captures info for R&I board and potential HAZREP
- Got a Best Practice? Send it to the Webmaster at the Safety Center. We'll add it to the collection and credit your squadron!!



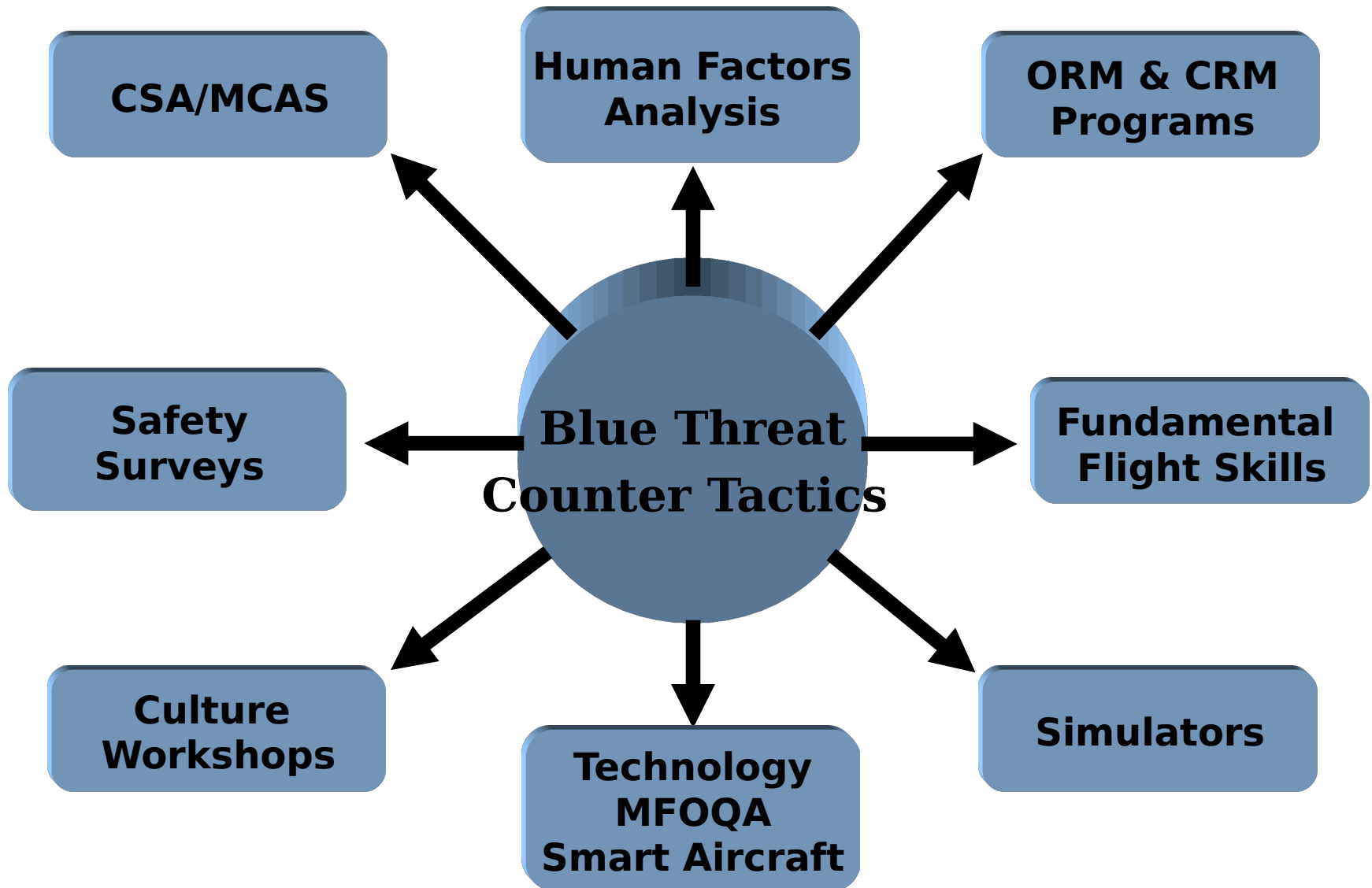
Survey Takeaways - FY 2005

Safety Surveys on 90+ aviation commands revealed:



- Ø Aviation HAZREP submissions
- Ø Poor NAMP program knowledge/compliance among command personnel
- Ø High OPTEMPO (real vs perceived pressure)
- Ø Personnel manning numbers are rising but personnel are often assigned billets based on career timing rather than being the “right person for the job”
- Ø Flight Surgeons spending more time in clinic and less time in squadrons.

Aviation Intervention Strategies



Current USN Aviation Safety Initiatives

- **Aviation Operational Risk Management & Fundamentals Campaign - CNAF directed**
- **Command Safety Surveys - NAVSAFECEN**
- **Command Culture Workshops - NAVSAFECEN**
- **Command Safety Assessment /Maintenance Climate Assessment Survey - online surveys**
- **Aviation Safety Training at Commander's Course and Aviation Safety Officer school**
- **Crew Resource Management program update**
- **Naval Safety Training Continuum**
- **Web Enabled Safety System hazard reporting**
- **Operation Resource Management Assessment System pilot project**
- **MFOQA pilot project**

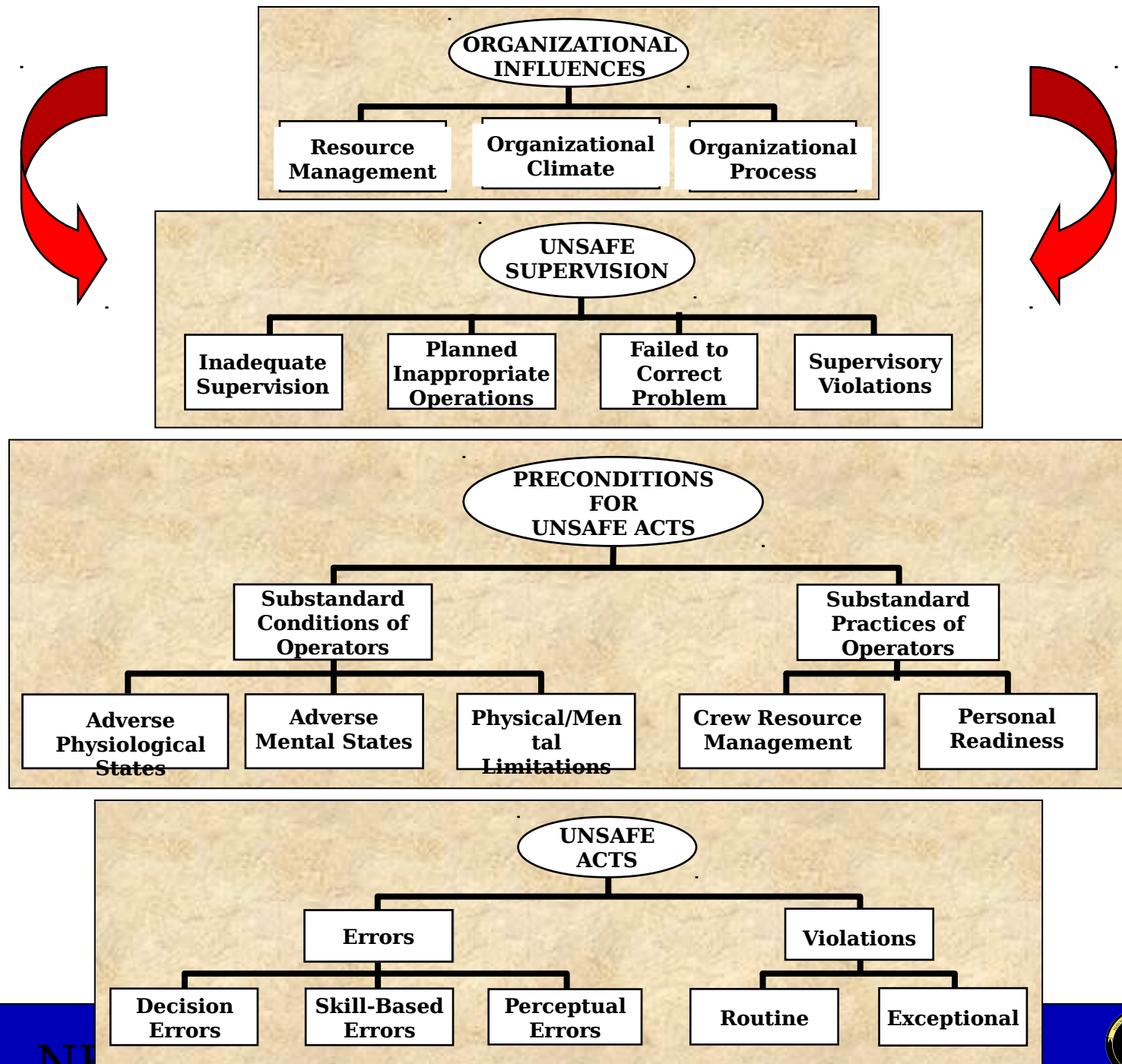


Current USMC Aviation Safety

Initiatives

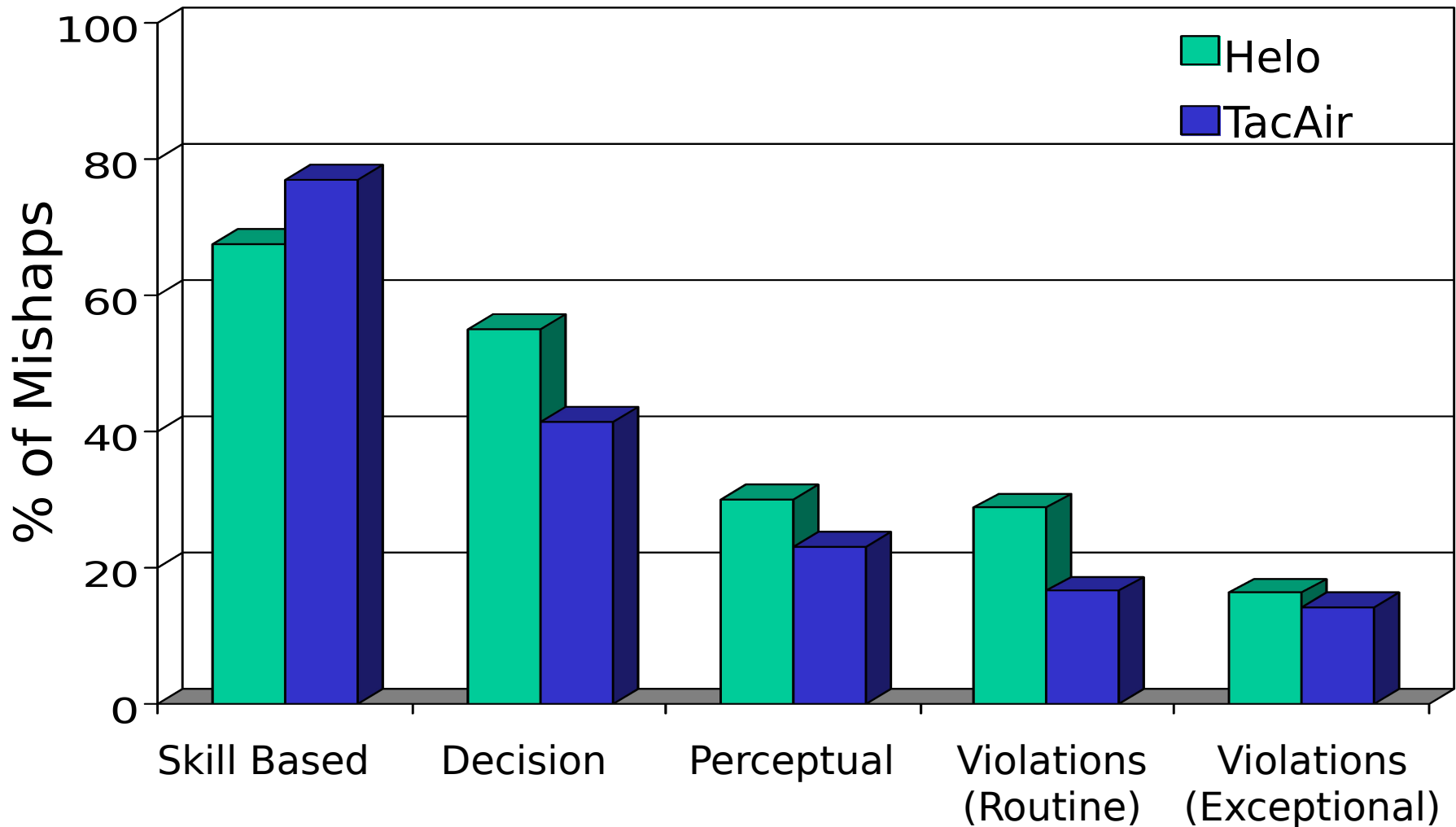
- **Aviation Operational Risk Management & Fundamentals Campaign**
 - ORM Review Boards
 - Mishap Tracking/Endorsements
 - Program compliance through Monthly Aviation ORM Status Reports
- **CMC Policy Directive 1-05 on Marine Corps Aviation Operational/Safety**
 - Addresses abysmal FY04 record and establishes a refocus on Marine Aviation (SIR reports, training, Instructor standardization, SOP reviews....)
- **Command Climate Safety Surveys/ Culture Workshops**
- **Aviation Safety Training at the Commander's Course**
- **Aircrew Training Systems (ATS)**
 - Manages Training (Maintenance, Aircrew, and Command & Control) by facilitating Standardization, Evaluation and Crew Resource Management in order to provide a tactically relevant training continuum
- **Human Error-based training/education**
 - Enhances current CRM program
 - Currently taught at MAWTS-1 WTI courses
 - 4th MAW as the pathfinder to present the training in the squadrons





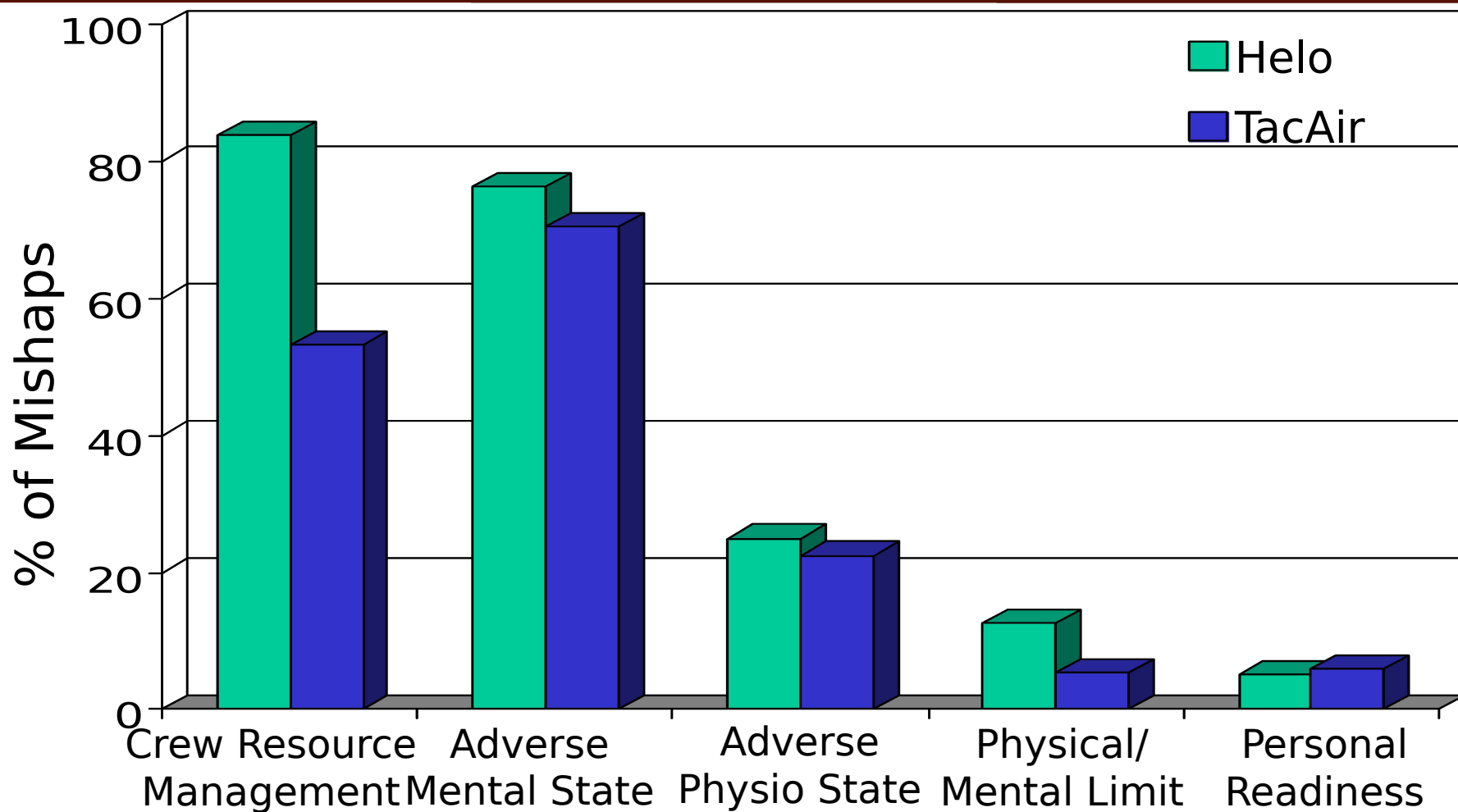
Human Factor Errors (FY90 - 02)

Unsafe Acts - Aircrew



Human Factor Errors (FY90 - 02)

Preconditions - Aircrew



A MISHAP-FREE NAVY+MARINE CORPS *Team*

Is It Possible ?

Navy Mishap Free Squadrons RW (FY-06)

HC-11

HSC-22

HSM-41

HC-85

HSC-26

HX-21

HS-2

HSL-42

HSL-60

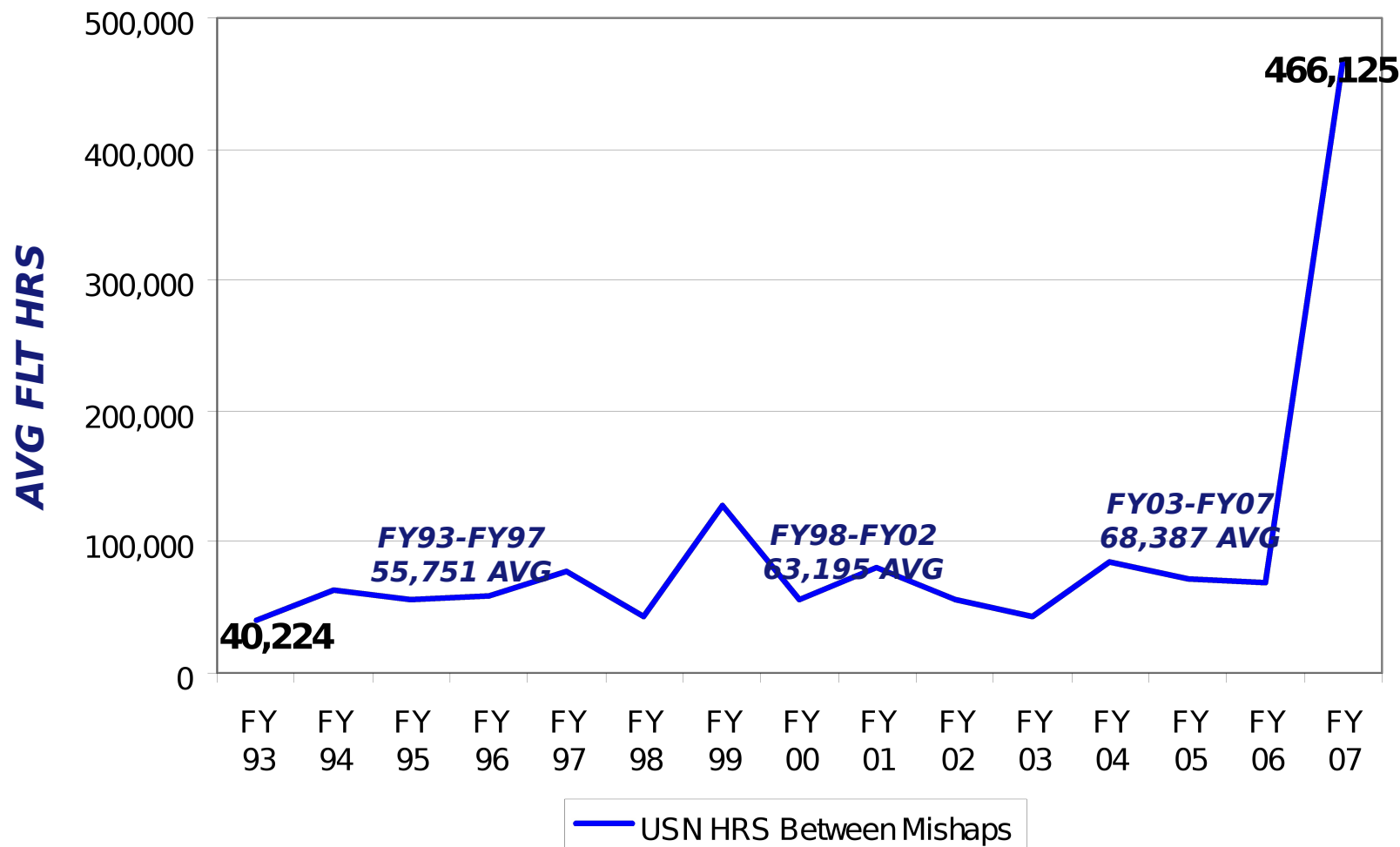
HS-3

** No reported Class A/B/C , FM/FRM/AGM/PMV/ROD*



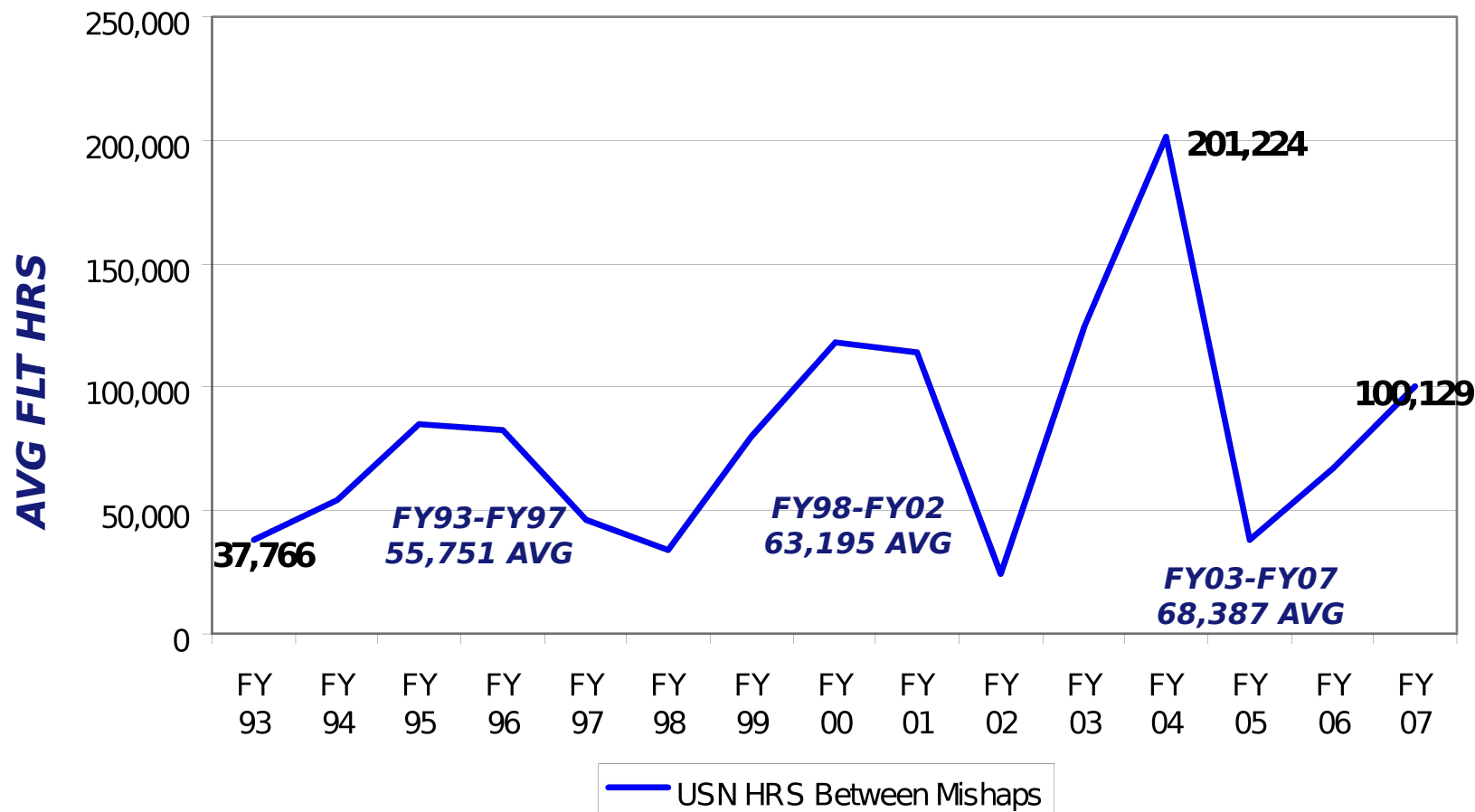


NAVY AVG FLIGHT HOURS BETWEEN CLASS A FLIGHT MISHAPS



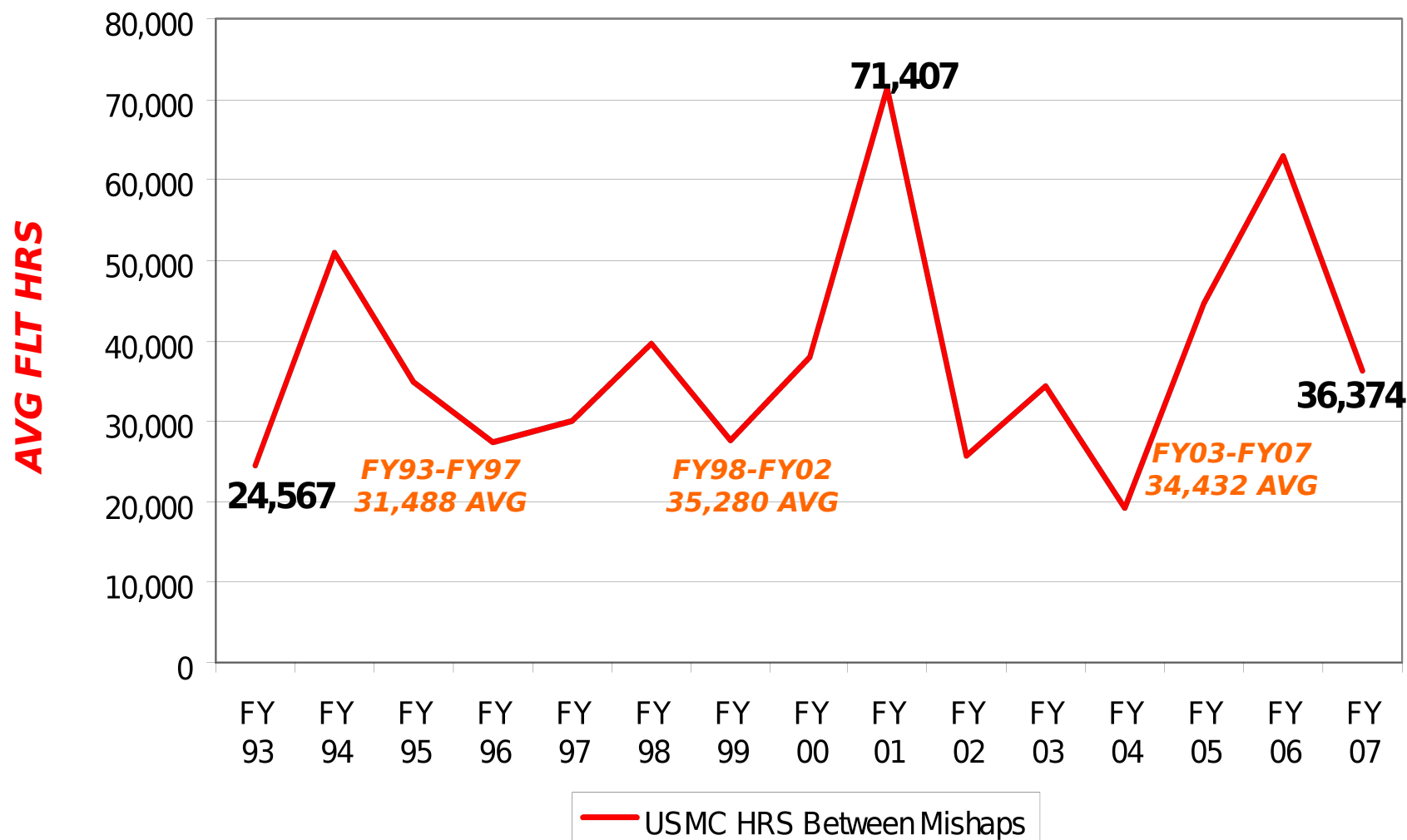


NAVY HELO AVG FLIGHT HOURS BETWEEN CLASS A FLIGHT MISHAPS



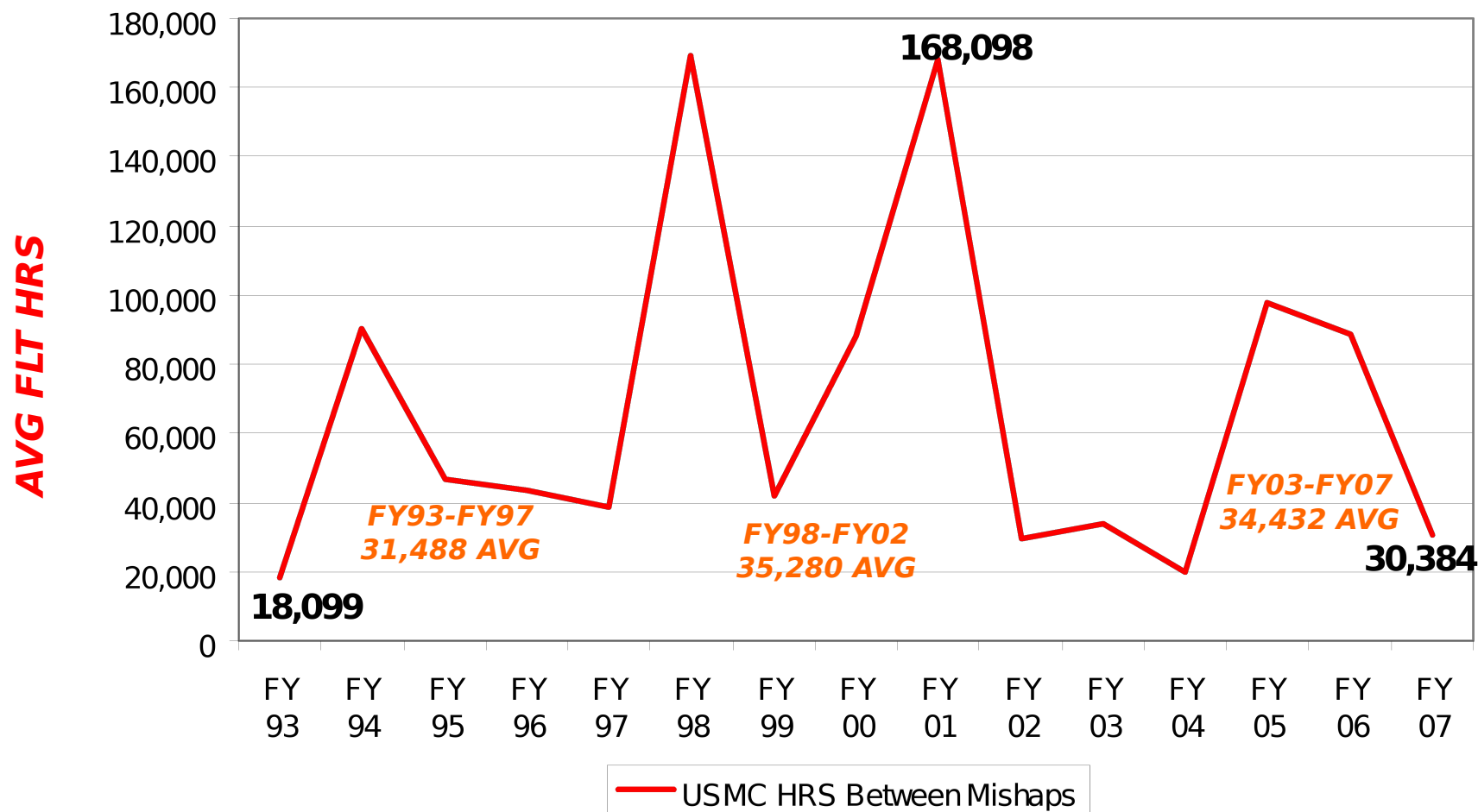


MARINE CORPS AVG FLIGHT HOURS BETWEEN CLASS A FLIGHT MISHAPS





MARINE CORPS HELO AVG FLIGHT HOURS BETWEEN CLASS A FLIGHT MISHAPS



Safety Symposium



NSC Website: Your Valuable Resource

***www.safetycenter.
navy.mil***

Naval Safety Center - Microsoft Internet Explorer provided by NMCI

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Resources

- **TRIPS** (Travel Risk Planning System)
 - [Navy](#) • [Marines](#)
- [Executive Summary](#)
- [Safety Toolbox](#)
- [75% Mishap Reduction](#)
- [Presentations](#)
- [Traffic Safety Toolbox](#)
- [Success Stories](#)
- [Statistics](#)
- [Seasonal Resources](#)
- [POD Notes, Slogans](#)

Quick Links

- [Photo of the Week](#)
- [ASCAS](#)
- [Friday Funnies](#)
- [Safety School](#)
- [Acquisition Safety](#)
- [Safety Surveys](#)
- [Culture Workshops](#)
- [Navy / NSC FOIA Request](#)
- [Secure Site \(PKI\)](#)

Staff

- [Biographies / Mission](#)

Traffic Death Update

At 0130 on February 26, a Marine private died in a car wreck on an interstate highway in Michigan. He was driving a van when he lost control; the van flipped several times. He had graduated from basic training last Friday. Also, a QMC from Naval Base Kitsap was killed in a wreck near Discovery Bay, Wash. He crossed the centerline and collided head-on with another car.

[PMV Stats](#) | [PMV Narratives](#)

Navy and Marine Corps PMV Deaths FY07 to date : **47**

In the Spotlight

What's New	More Articles
<ul style="list-style-type: none"> • NEW! CNO FY06 Awards For Achievement In Safety Ashore • 15th Safety Professional Development Conference in Virginia Beach, March 12-16 	<ul style="list-style-type: none"> • New! Special issue magazine about ORM slated for April 2007 • Navy and Marine Corps Safety Planner 2007 & 2007 Safety Planner Survey

Initiatives and Tools

PMV Investigation	MISHAP DASHBOARD	BEST PRACTICES	ORM	WINTER Guide
2007 ISSC	MARINE CORPS SAFETY RESOURCES	WESS	NESB	POA&M

Start | SSSL Brief-COL Jamison | Naval Safety Center - ...





QUESTIONS?
COMMENTS!

QUESTIONS?
COMMENTS!





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